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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,943

07/05/2006

Yasushi Noguchi

128634

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25944 7590 03/09/2009  
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EXAMINER

ROYSTON, ELIZABETH

ART UNIT

PAPER NUMBER

4122

MAIL DATE

DELIVERY MODE

03/09/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,943	<b>Applicant(s)</b> NOGUCHI ET AL.	
	<b>Examiner</b> Elizabeth S. Royston	<b>Art Unit</b> 4122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 12-31 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-31 is/are rejected.
- 7) ☒ Claim(s) 28-31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/5/2006</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: The specification does not include proper introductory material, such as cross-references to related applications. See 37 CFR 1.78 and MPEP § 201.11.

Appropriate correction is required.

### ***Claim Objections***

2. Claims 28-31 are objected to because of the following informalities: the limitation of "mm" is not supported by the specification. For purposes of examination, the unit "µm", which is supported by the specification, will be considered. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 12 and 13 recite the limitation "thus formed body" in line 3 for both claims.

There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 12-31 rejected under 35 U.S.C. 103(a) as being unpatentable over Noguchi (US PG PUB 2003/0143370) in view of Nagata (US PN 6440185) and Slykhouse (US PN 3773573), as evidenced by the MATSUMOTO MICROSPHERE F-series product data.

Noguchi teaches a porous ceramic honeycomb filter with a plurality of through-holes opened in an exhaust gas inflow-side end face and an exhaust gas outflow-side end face and in which the plurality of through holes are closed alternately in opposite end face portions (paragraph 47, line 1-4). This filter made by mixing together a cordierite and silicon carbide ceramic material (paragraph 43, line 3; paragraph 44, line 3), a foamed resin (paragraph 57, line 4), and a forming auxiliary (paragraph 61, line 1-4), forming the mixture into a body (paragraph 63, line 1-4), and then firing the body (paragraph 65, line 1-6).

Noguchi does not explicitly disclose the properties or structural features of the foamed resin.

Nagata teaches a method for forming a porous substance (figure 1) by forming a mixture of a SiC ceramic material (col. 7, line 16, 21), forming auxiliary (col. 2, line 2), and a foamed resin (col. 7, line 47-51), casting the mixture into a mold to form a body (col. 7, line 51-52), and heating the thus formed body (col. 7, line 61-62). The foamed resin is formed using an acrylonitrile and methacrylate copolymer (col. 5, line 30-31), contains greater than 8wt% (10-15wt%) of a C5 gas (col. 6, line 35-48), has a particle size of 10 to 200  $\mu\text{m}$  (col. 6, line 2-3), and a shell wall thickness of 0.05 to 5  $\mu\text{m}$  (col. 5, line 52-54). Nagata specifically lists the commercially available product MATSUMOTO MICROSPHERE F-series (col. 6, line 54) as a suitable foamed resin, which has storage stability up to 40°C. Given that the composition, structure, storage temperature, and use of the foamed resin is the same as instantly claimed, one of ordinary skill in the art at the time the invention was made would have expected the retention of gas properties to intrinsically be the same as instantly claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the foamed resin taught by Nagata as the foamed resin taught in Noguchi. The rationale to do so would have been found in the teaching of Nagata that using such a foamed resin in mixtures predictably adds numerous small pores to a material (col. 3, line 16-19, line 49-50), which is in line with the motivation provided by Noguchi of using a foamed resin to create a high-porosity structure (Noguchi, paragraph 58).

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Noguchi does not explicitly disclose the composition of the foamed resin.

Slykhouse teaches a 2-200  $\mu\text{m}$  diameter (col. 3, line 64-66) foamed resin made of a methyl methacrylate - acrylonitrile copolymer comprising 10-90% acrylonitrile (col. 3, line 26-29) filled with 10-25wt% gas (col. 3, line 53).

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Slykhouse and Noguchi. The rationale to do so would be found in the teaching of Slykhouse that using such a foamed resin predictably improves the distribution of discrete gas bubbles (col. 1, line 56-64) in a mixture, which is in line with the rationale provided by Noguchi of using a foamed resin to create a high-porosity structure (Noguchi, paragraph 58).

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth S. Royston whose telephone number is 571-270-7654. The examiner can normally be reached on M-Th 7:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ER/  
Patent Examiner, GAU 4122

/Timothy J. Kugel/  
Primary Examiner, Art Unit 1796